REMARKS

Applicants appreciate the thorough examination of the present application as evidenced by the Office Action of April 20, 2007 (hereinafter "Office Action"). Applicants further appreciate the courtesies extended by Examiner Keefer to the undersigned during the telephone interview of August 27, 2007.

In response, Applicants have amended Claims 1, 4, 11, 14, 21, 24, 31, and 34 as described in detail below. Accordingly, Applicants hereby request further consideration of the application in view of the amendments above and the comments that follow.

Interview Summary

Applicants wish to thank the Examiner for discussing the pending claims with Applicants' representative on August 27, 2007. During the interview, Applicants' representative discussed the outstanding rejections of independent Claims 1, 11, 21, and 31. The Examiner agreed that the independent claims may overcome the rejections of record if amended to include recitations that the modify QoS and/or bandwidth allocation message is received independent of a request from a receiver or client device; however, the Examiner indicated that further search and consideration would be needed. Applicants respectfully submit that the above remarks constitute an Interview Summary pursuant to MPEP §713.04.

However, upon further review of the cited references, Applicants have instead amended independent Claim 1 to recite that the modify QoS and/or bandwidth allocation message is "**an application layer message that is received independent of evaluation by the BRAS and the RG**". Independent Claims 11, 21, and 31 and dependent Claims 4, 14, 24, and 34 have been similarly amended. Support for these amendments can be found, for example, at Page 53, lines 16-24 and Page 66, lines 10-12 of the present specification. No new matter has been added. Accordingly, Applicants respectfully submit that these recitations also overcome the rejections of record, as discussed in detail below.

The Section 101 Rejections

Claims 11-20 and 31-40 stand rejected under 35 USC §101 as being directed to non-statutory subject matter. In particular, because the "means" recited in Claim 11 and the "computer readable medium" recited in Claim 31 may include software and/or carrier waves, the Office Action asserts that these claims recite subject matter that does not fall within a statutory category of invention (i.e., a process, machine, manufacture, or a composition of matter), but instead include functional descriptive material. *See* Office Action, pages 2-3.

Applicants respectfully disagree. As provided in the MPEP:

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, **"functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component**. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) **"Nonfunctional descriptive material" includes but is not limited to music, literary works, and a compilation or mere arrangement of data**.
>
> Both types of "descriptive material" are nonstatutory when claimed as descriptive material *per se*, 33 F.3d at 1360, 31 USPQ2d at 1759. **When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized**.

MPEP, § 2106 (*emphasis added*). Accordingly, as Claim 31 recites "a computer program product", and "computer readable program code" configured to receive a modify QoS and/or bandwidth allocation message, update the broadband access server (BRAS), and update the routing gateway (RG), Applicants submit that Claim 31 recites functional descriptive material recorded on a computer readable material. Thus, Applicants respectfully submit that Claim 31 and the claims dependent therefrom recite statutory subject matter.

In addition, Applicants note that, when evaluating means-plus-function limitations, "[t]he scope of a 'means' limitation is defined as the corresponding structure or material set forth in the written description and equivalents thereof." MPEP, §2106. As such, although

the Office Action asserts that the "means" recited in Claim 11 may be entirely software (which is considered statutory subject matter for at least the reasons discussed above with reference to Claim 31), Applicants submit that the present specification also provides sufficient corresponding structure (and operations performed thereon) to fall within one or more statutory categories of invention, such as a process and/or a machine. For example, Claim 11 recites "a Regional/Access Network (RAN)", "a broadband access server (BRAS)", and "a Routing Gateway (RG)", and receiving, updating, and sending operations performed thereon, as described, for example, with reference to Figures 5 and 32A-32B of the present specification. *See also*, Specification, Pages 71-76. Accordingly, Applicants submit that Claim 11 and the claims dependent therefrom also recite statutory subject matter.

Thus, Applicants respectfully request withdrawal of the rejections of Claims 11, 31, and the claims dependent therefrom under 35 USC §101 for at least the above reasons.

The Section 102 Rejections

Claims 1-5, 10-15, 20-25, 31-35, and 40 stand rejected under 35 USC 102(a) as being anticipated by the publication "DSL Evolution—Architecture Requirements for the Support of QoS-Enabled IP Services", DSL Forum, December 2002 (hereinafter "DSL Forum"). Amended Claim 1, for example, recites:

> 1. A method of managing Quality of Service (QoS) and/or bandwidth allocation in a Regional/Access Network (RAN) having a broadband access server (BRAS) that facilitates differentiated end-to-end data transport between a Network Service Provider (NSP) and/or an Application Service Provider (ASP), and a Customer Premises Network (CPN) that includes a Routing Gateway (RG), comprising:
>
> **receiving** at the RAN, **a modify QoS and/or bandwidth allocation message** including updated QoS and/or bandwidth information from the NSP and/or ASP, **wherein the message comprises an application layer message that is received independent of evaluation by the BRAS and the RG**;
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> updating the BRAS with the QoS and/or bandwidth information; and
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> sending the updated QoS and/or bandwidth information to the RG.

The Office Action asserts that DSL Forum discloses that "[a]pplications...request service or resources of the RAN" at Page 30, "BRAS map reservation requests into Diffserv PHBs" at Page 31, and "CPE (aka RG) accepts policy information regarding how to manage

resources from an external entity" at Page 31. Office Action, Page 4. As such, the Office Action argues that these descriptions in DSL Forum disclose the "receiving", "updating", and "sending" recitations of Claim 1. *See* Office Action, Page 4.

However, Applicants respectfully submit that DSL Forum does not disclose or suggest receiving a modify QoS and/or bandwidth allocation message that is received at the application layer "independent of evaluation by the BRAS and the RG", as recited by amended Claim 1. For example, although DSL Forum discloses that "[a]pplications...request service or resources of the Regional/Access network (e.g. through SIP, RSVP, or some other RSVP-like mechanism)", the cited portions of DSL Forum further note that "[t]he **RG and BRAS are involved in requests for services and resources in the network** based on a per-application need (**e.g. they monitor or proxy SIP invite messages or RSVP messages**)". DSL Forum, Page 30, lines 59-62 (*emphasis added*). In other words, DSL Forum describes that the RG and BRAS disclosed therein monitor the SIP or RSVP messages requesting network resources, and as such, does not describe receiving such messages at the RAN *independent of evaluation by the BRAS and the RG.* Indeed, as is well-known in the art, RSVP is a transport layer protocol that involves evaluation of a reservation request *at each node in the network. See,* for example, http://www.isi.edu/rsvp/overview.html. Accordingly, Applicants respectfully submit that DSL Forum fails to disclose or suggest receiving "a modify QoS and/or bandwidth allocation message...independent of evaluation by the BRAS and the RG", as recited by amended Claim 1, and in fact, teaches away from such recitations.

Thus, as the cited portions of DSL Forum fails to disclose or suggest each and every element of amended Claim 1 as required for a rejection under 35 USC §102, Applicants submit that amended Claim 1 is patentable over DSL Forum for at least the above reasons. Amended Claims 11, 21, and 31 include similar recitations, and are thus patentable for at least similar reasons. Also, dependent Claims 2-10, 12-20, 22-30, and 32-40 are patentable at least per the patentability of amended Claims 1, 11, 21, and 31 from which they depend.

The Section 103 Rejections

Claims 1-40 also stand rejected under 35 USC 103(a) as being obvious over U.S. Patent 6,876,668 to Chawla et al. (hereinafter "Chawla") in view of Figure 4 of Applicant's Admitted Prior Art (hereinafter "AAPA"). *See* Office Action, Page 6. For example, with reference to Claim 1, the Office Action relies on the AAPA as disclosing the general network architecture including the RAN, BRAS, NSP, ASP, and CPN of Claim 1, and relies on Chawla as disclosing the remaining recitations. In particular, the Office Action asserts that Chawla discloses "a request for modification in bandwidth", "updating information within the network elements", and a "request for increased bandwidth is transmitted to each network element in the path", respectively corresponding to the "receiving", "updating", and "sending" recitations of Claim 1. Office Action, Pages 6-7.

Applicants respectfully disagree. Chawla discloses a communications network **200** including data communications devices **201A** to **201E** (such as servers, routers, etc.) and hosts **210-A1** to **210-A3** configured to provide dynamic bandwidth allocation. *See* Chawla, Fig. 3. For example, as described in Chawla with reference to Figure 3, "host **210-A1** is a video server that serves a stream of video packets **203** (the "A" video stream) across the communications network **200** to recipient hosts **210-A2** and **210-A3** using a multicasting protocol." Chawla, Col. 12, lines 5-8. More particularly, a cited portion of Chawla provides:

> If a video client application (not shown) executing on recipient host 210-A3 senses that more network bandwidth is required (such as 120 Kbps) to effectively receive the "A" video data stream 203, **the host 210-A3 can use RSVP** to **make a bandwidth reservation request** (not shown) **containing bandwidth allocation adjustment information *to each network device* 201-E, 201-D, 201C and 201-B**. The bandwidth allocation adjustment information in the bandwidth reservation request specifies a request for 120 Kbps of bandwidth to be reserved for the "A" video data stream 203.

Chawla, Col. 13, lines 20-30 (*emphasis added*). Accordingly, Chawla describes an *RSVP-based* bandwidth reservation request (which includes bandwidth allocation adjustment information) that is sent from the recipient device **210-A3** to *each of* the network devices **201-E**, **201-D**, **201C** and **201-B**. In other words, the cited portion of Chawla describes a *transport layer* bandwidth reservation request *that is evaluated at each of the nodes* **201-E**, **201-D**,

201C and **201-B** *in the network* **200**. As such, nowhere does the cited portion of Chawla disclose or suggest that the bandwidth reservation request is *an application layer* message received from the service provider (i.e., video server **210-A1**) *independent of evaluation* at the intervening network nodes **201-E**, **201-D**, **201C** and **201-B**. Thus, Chawla fails to disclose or suggest the modify QoS and/or bandwidth allocation message of amended Claim 1, which is "an application layer message" received from the service provider (i.e., the NSP and/or ASP) "independent of evaluation" by the intervening network elements (i.e., the BRAS and RG). Moreover, the RSVP-based bandwidth reservation requests of Chawla teach away from such recitations.

Furthermore, Applicants submit that, even if combined, the combination of Chawla and the AAPA fails to disclose the recitations of amended Claim 1. For example, if the RSVP-based bandwidth reservation requests of Chawla were combined with the network architecture of the AAPA, the Regional/Access Network (RAN) would receive *transport layer* bandwidth reservation requests sent *from $User_1$ and/or $User_2$* of the Customer Premises Network (CPN) that were *evaluated by* the Broadband Access Server (BRAS) and the Routing Gateway (RG). As such, the combination of Chawla and the AAPA would not receive, at the RAN, (1) an *application layer* message (2) *from the NSP and/or ASP* (3) *independent of evaluation* by the BRAS and the RG, as recited by amended Claim 1. *See* Chawla, Col. 13, lines 20-30 and AAPA, Fig. 4. Thus, Applicants submit that the combination of Chawla and the AAPA not only fails to disclose or suggest the recitations of amended Claim 1, but also teaches away from such recitations.

Accordingly, Applicant submits that the Office Action fails to establish a *prima facie* case of obviousness based on the teachings of Chawla and the AAPA. Thus, Applicant respectfully submits that amended Claim 1 is patentable for at least the above reasons. Amended Claims 11, 21, and 31 include similar recitations, and are thus patentable for at least similar reasons. Also, dependent Claims 2-10, 12-20, 22-30, and 32-40 are patentable at least per the patentability of amended Claims 1, 11, 21, and 31 from which they depend.

Many of the Dependent Claims Are Separately Patentable

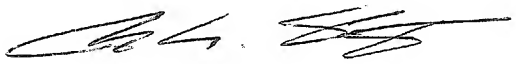
While each of the dependent claims is patentable as depending from a patentable base claim, as noted above, Applicant submits that many of the dependent claims are also separately patentable.

For example, amended Claim 4 recites, in part, "sending an application layer acknowledgment message responsive to receipt of the modify QoS and/or bandwidth allocation message from the RAN to the NSP and/or ASP independent of evaluation by the BRAS and the RG". In its rejection of Claim 4, the Office Action asserts that both DSL Forum and Chawla disclose "the use of RSVP which inherently has an acknowledgement indicating that the reservation was successful". Office Action, Pages 5 and 7. However, as noted above with reference to the Section 102 rejections, RSVP is a *transport layer* protocol where requests are *evaluated at each node in the network.* As such, nowhere do the cited portions of DSL Forum and Chawla disclose or suggest sending an acknowledgement message *at the application layer* and *independent of evaluation* by the intervening network elements (such as the BRAS and the RG). Moreover, as RSVP is a receiver-initiated protocol, acknowledgement messages may be sent from the service provider to the receiving devices (such as the Routing Gateway (RG) of the Customer Premises Network (CPN) of DSL Forum or the receiving hosts **210-A2** and/or **210-A3** of Chawla), and not "from the RAN to the NSP and/or ASP", as recited by amended Claim 4. Accordingly, Applicants submit that amended Claim 4 is separately patentable for at least these reasons. Amended Claims 14, 24, and 34 include similar recitations, and are thus separately patentable for at least similar reasons.

Conclusion

Accordingly, in light of the above amendments and remarks, Applicant respectfully submits that all of the pending claims are now in condition for allowance. Thus, Applicant respectfully requests allowance of the pending claims and passing the application to issue. Applicant encourages the Examiner to contact the undersigned by telephone to resolve any remaining issues.

Respectfully submitted,



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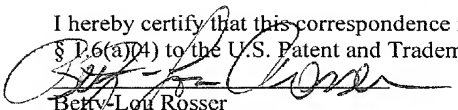

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